

## Claims

What is claimed:

- 1 1. A method for wirelessly transmitting data between a base transceiver station and a  
2 subscriber unit, the base transceiver station comprising a plurality of transmit antennae,  
3 the method comprising:  
4 generating control signals to configure the base transceiver station to transmit  
5 selected data streams to a corresponding subscriber unit on an assigned channel of a  
6 multiple access protocol;  
7 transmitting in response to the control signals and in a spatially separate fashion,  
8 the selected data streams on the assigned channel of the multiple access protocol; and  
9 utilizing co-located electric dipole and magnetic dipole antennae at the subscriber  
10 unit to receive the selected data streams.
- 1 2. The method of claim 1 wherein each electric dipole antennae has a different  
2 polarization.
- 1 3. The method of claim 1 wherein each magnetic dipole antenna has a different  
2 polarization.
- 1 4. The method of claim 1 wherein the electric dipole antennae comprise 3 electric  
2 dipole antennae and the magnetic dipole antennae comprise 3 magnetic dipole antennae.

- 1 5. The method of claim 4 wherein the 3 electric dipole antennae have 3 different  
2 polarizations and the 3 magnetic dipole antennae have 3 different polarizations.
- 1 6. The method of claim 5 wherein the data streams are transmitted via a scattering  
2 channel.
- 1 7. The method of claim 1 wherein the subscriber unit comprises a palm sized device.
- 1 8. The method of claim 7 wherein the electric dipole antennae comprise 3 electric  
2 dipole antennae and the magnetic dipole antennae comprise 3 magnetic dipole antennae.
- 1 9. The method of claim 8 wherein the 3 electric dipole antennae have 3 different  
2 polarizations and the 3 magnetic dipole antennae have 3 different polarizations.
- 1 10. The method of claim 9 wherein the data streams are transmitted via a scattering  
2 channel.
- 1 11. A method for wirelessly receiving data at a base transceiver station from a  
2 subscriber unit, the base transceiver station comprising a plurality of antennae, the  
3 method comprising:  
4 utilizing co-located electric dipole antennae at the subscriber unit to transmit  
5 selected data streams on an assigned channel of a multiple access protocol;

6           generating control signals to configure the base transceiver station to receive the  
7   selected data streams from the subscriber unit on the assigned channel of a multiple  
8   access protocol; and  
9           receiving in response to the control signals the selected data streams on the  
10   assigned channel of the multiple access protocol.

1   12.    The method of claim 1 wherein each electric dipole antennae has a different  
2   polarization.

1   13.    The method of claim 12 wherein the electric dipole antennae comprise 3 electric  
2   dipole antennae.

1   14.    The method of claim 13 wherein the 3 electric dipole antennae have 3 different  
2   polarizations.

1   15.    The method of claim 14 wherein the data streams are transmitted via a scattering  
2   channel.

1   16.    The method of claim 11 wherein the subscriber unit comprises a palm sized  
2   device.

1   17.    The method of claim 16 wherein the electric dipole antennae comprise 3 electric  
2   dipole antennae.

1 18. The method of claim 17 wherein the 3 electric dipole antennae have 3 different  
2 polarizations.

1 19. The method of claim 18 wherein the data streams are transmitted via a scattering  
2 channel.

1 20. A system for wirelessly transmitting data between a base transceiver station and a  
2 subscriber unit, the base transceiver station comprising a plurality of transmit antennae,  
3 the system comprising:

4 means for generating control signals to configure the base transceiver station to  
5 transmit selected data streams to a corresponding subscriber unit on an assigned channel  
6 of a multiple access protocol;

7 means for transmitting in response to the control signals and in a spatially  
8 separate fashion, the selected data streams on the assigned channel of the multiple access  
9 protocol; and

10 means for utilizing co-located electric dipole and magnetic dipole antennae at the  
11 subscriber unit to receive the selected data streams.

1 21. The system of claim 20 wherein each electric dipole antennae has a different  
2 polarization.

1 22. The system of claim 20 wherein each magnetic dipole antenna has a different  
2 polarization.

1 23. The system of claim 20 wherein the electric dipole antennae comprise 3 electric  
2 dipole antennae and the magnetic dipole antennae comprise 3 magnetic dipole antennae.

1 24. The system of claim 23 wherein the 3 electric dipole antennae have 3 different  
2 polarizations and the 3 magnetic dipole antennae have 3 different polarizations.

1 25. The system of claim 24 wherein the data streams are transmitted via a scattering  
2 channel.

1 26. The system of claim 20 wherein the subscriber unit comprises a palm sized  
2 device.

1 27. The system of claim 26 wherein the electric dipole antennae comprise 3 electric  
2 dipole antennae and the magnetic dipole antennae comprise 3 magnetic dipole antennae.

1 28. The system of claim 27 wherein the 3 electric dipole antennae have 3 different  
2 polarizations and the 3 magnetic dipole antennae have 3 different polarizations.

1 29. The system of claim 28 wherein the data streams are transmitted via a scattering  
2 channel.

30. A system for wirelessly receiving data at a base transceiver station from a subscriber unit, the base transceiver station comprising a plurality of antennae, the system comprising:

means for utilizing co-located electric dipole antennae at the subscriber unit to transmit selected data streams on an assigned channel of a multiple access protocol;

means for generating control signals to configure the base transceiver station to receive the selected data streams from the subscriber unit on the assigned channel of a multiple access protocol; and

means for receiving in response to the control signals the selected data streams on the assigned channel of the multiple access protocol.

31. The system of claim 30 wherein each electric dipole antennae has a different polarization.

32. The system of claim 30 wherein the electric dipole antennae comprise 3 electric dipole antennae.

33. The system of claim 32 wherein the 3 electric dipole antennae have 3 different polarizations.

34. The system of claim 33 wherein the data streams are transmitted via a scattering channel.

1 35. The system of claim 30 wherein the subscriber unit comprises a palm sized  
2 device.

1 36. The system of claim 35 wherein the electric dipole antennae comprise 3 electric  
2 dipole antennae.

1 37. The system of claim 36 wherein the 3 electric dipole antennae have 3 different  
2 polarizations.

1 38. The system of claim 37 wherein the data streams are transmitted via a scattering  
2 channel.

1 39. A method for wirelessly transmitting data between a base transceiver station and a  
2 subscriber unit, the base transceiver station comprising a plurality of transmit antennae,  
3 the method comprising:

4 generating control signals to configure the base transceiver station to transmit  
5 selected data streams to a corresponding subscriber unit on an assigned channel of a  
6 multiple access protocol, wherein the assigned channel comprises a scattering channel;  
7 transmitting in response to the control signals and in a spatially separate fashion,  
8 the selected data streams on the assigned channel of the multiple access protocol; and

9 utilizing 6 co-located antennae at the subscriber unit to receive the selected data  
10 streams wherein the subscriber unit comprises a palm-sized device and the 6 co-located  
11 antennae comprise 3 electric dipole antennae and 3 magnetic dipole antennae wherein the

12 3 electric dipole antennae have 3 different polarizations and the 3 magnetic dipole  
13 antennae have 3 different polarizations.

1 40. A method for wirelessly receiving data at a base transceiver station from a  
2 subscriber unit, the base transceiver station comprising a plurality of antennae, the  
3 method comprising:  
4 utilizing 3 co-located antennae at the subscriber unit to transmit selected data  
5 streams on an assigned channel of a multiple access protocol, wherein the assigned  
6 channel comprises a scattering channel, wherein the subscriber unit comprises a palm-  
7 sized device and the 3 co-located antennae comprise 3 electric dipole antennae, wherein  
8 the 3 electric dipole antennae have 3 different polarizations;  
9 generating control signals to configure the base transceiver station to receive the  
10 selected data streams from the subscriber unit on the assigned channel of a multiple  
11 access protocol; and  
12 receiving in response to the control signals the selected data streams on the  
13 assigned channel of the multiple access protocol.

1 41. A system for wirelessly transmitting data between a base transceiver station and a  
2 subscriber unit, the base transceiver station comprising a plurality of transmit antennae,  
3 the system comprising:  
4 means for generating control signals to configure the base transceiver station to  
5 transmit selected data streams to a corresponding subscriber unit on an assigned channel



of a multiple access protocol, wherein the assigned channel comprises a scattering channel;

means for transmitting in response to the control signals and in a spatially separate fashion, the selected data streams on the assigned channel of the multiple access protocol; and

means for utilizing 6 co-located antennae at the subscriber unit to receive the selected data streams wherein the subscriber unit comprises a palm-sized device and the 6 co-located antennae comprise 3 electric dipole antennae and 3 magnetic dipole antennae wherein the 3 electric dipole antennae have 3 different polarizations and the 3 magnetic dipole antennae have 3 different polarizations.

42. A system for wirelessly receiving data at a base transceiver station from a subscriber unit, the base transceiver station comprising a plurality of antennae, the system comprising:

means for utilizing 3 co-located antennae at the subscriber unit to transmit selected data streams on an assigned channel of a multiple access protocol, wherein the assigned channel comprises a scattering channel, wherein the subscriber unit comprises a palm-sized device and the 3 co-located antennae comprise 3 electric dipole antennae, wherein the 3 electric dipole antennae have 3 different polarizations;

means for generating control signals to configure the base transceiver station to receive the selected data streams from the subscriber unit on the assigned channel of a multiple access protocol; and

- 12 means for receiving in response to the control signals the selected data streams on
- 13 the assigned channel of the multiple access protocol.